

## C L A I M S

1. A detector for detecting a state on a  
2 detection surface, characterized by comprising:  
3 a prism which includes a first surface as a  
4 detection surface;  
5 light-emitting means for applying light to the  
6 detection surface through an interior of said prism;  
7 light-receiving means for receiving reflected  
8 light of light applied from said light-emitting means to  
9 the detection surface; and  
10 state detection means for detecting a state on  
11 the detection surface on the basis of the reflected  
12 light received by said light-receiving means.

2. A detector for detecting a state on a  
2 detection surface according to claim 1, characterized by  
3 further comprising a mirror which reflects specular  
4 reflection of light applied from said light-emitting  
5 means to the detection surface and returns the light to  
6 the detection surface through the interior of said  
7 prism,  
8 wherein said light-receiving means receives  
9 the specular reflection of the light from the detection  
10 surface, as the reflected light, which is returned by  
11 said mirror.

3. A detector for detecting a state on a  
2 detection surface according to claim 1, characterized by  
3 further comprising

4                   cooling means for cooling said prism, and  
5                   a mirror which reflects specular reflection of  
6 light applied from said light-emitting means to the  
7 detection surface and returns the light to the detection  
8 surface through the interior of said prism,  
9                   wherein said light-receiving means receives  
10 the specular reflection of the light from the detection  
11 surface, as the reflected light, which is returned by  
12 said mirror, and  
13                   said state detection means detects moisture  
14 produced on the detection surface of said prism which is  
15 cooled by said cooling means, on the basis of the  
16 specular reflection received by said light-receiving  
17 means.

4. A detector for detecting a state on a  
2 detection surface according to claim 1, characterized in  
3 that said light-receiving means receives the specular  
4 reflection of the light from the detection surface, as  
5 the reflected light, which is applied from said  
6 light-emitting means.

5. A detector for detecting a state on a  
2 detection surface according to claim 1, characterized by  
3 further comprising cooling means for cooling said prism,  
4                   wherein said light-receiving means receives  
5 the specular reflection of the light from the detection  
6 surface, as the reflected light, which is applied from  
7 said light-emitting means, and

8                   said state detection means detects moisture  
9   produced on the detection surface of said prism which is  
10   cooled by said cooling means, on the basis of the  
11   specular reflection received by said light-receiving  
12   means.

6. A detector for detecting a state on a  
2   detection surface according to claim 1, characterized by  
3   further comprising  
4                   a mirror which reflects specular reflection of  
5   light applied from said light-emitting means to the  
6   detection surface and returns the light to the detection  
7   surface through the interior of said prism, and  
8                   cooling means, provided on a second surface of  
9   said prism which serves as an incident surface of light  
10   from said light-emitting means and an exit surface of  
11   light to said light-receiving means, for cooling said  
12   prism,  
13                   wherein said light-receiving means receives  
14   the specular reflection of the light from the detection  
15   surface, as the reflected light, which is returned by  
16   said mirror, and

17                   said state detection means detects moisture  
18   produced on the detection surface of said prism which is  
19   cooled by said cooling means, on the basis of the  
20   specular reflection received by said light-receiving  
21   means.

7. A detector for detecting a state on a

2 detection surface according to claim 1, characterized by  
3 further comprising  
4 a mirror which reflects specular reflection of  
5 light applied from said light-emitting means to the  
6 detection surface and returns the light to the detection  
7 surface through the interior of said prism, and  
8 cooling means, provided on a second surface of  
9 said prism which serves as an incident surface of light  
10 from said light-emitting means and an exit surface of  
11 light to said light-receiving means, for cooling said  
12 prism,  
13 wherein said light-receiving means receives  
14 the specular reflection of the light from the detection  
15 surface, as the reflected light, which is returned by  
16 said mirror,  
17 said state detection means detects moisture  
18 produced on the detection surface of said prism which is  
19 cooled by said cooling means, on the basis of the  
20 specular reflection received by said light-receiving  
21 means,  
22 said cooling means comprises a thermoelectric  
23 cooling element with one surface serving as a  
24 low-temperature-side surface and the other surface  
25 serving as a high-temperature-side surface,  
26 said thermoelectric cooling element is placed  
27 so as to make the low-temperature-side surface serve as  
28 a second surface side of said prism,

29                   a heat dissipation member is mounted on the  
30 high-temperature-side surface of said thermoelectric  
31 cooling element, and  
32                   said light-emitting means and said  
33 light-receiving means are provided so as to extend  
34 through said thermoelectric cooling element and said  
35 heat dissipation member.